FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

November 3 to 9, 2013 (Week 45)

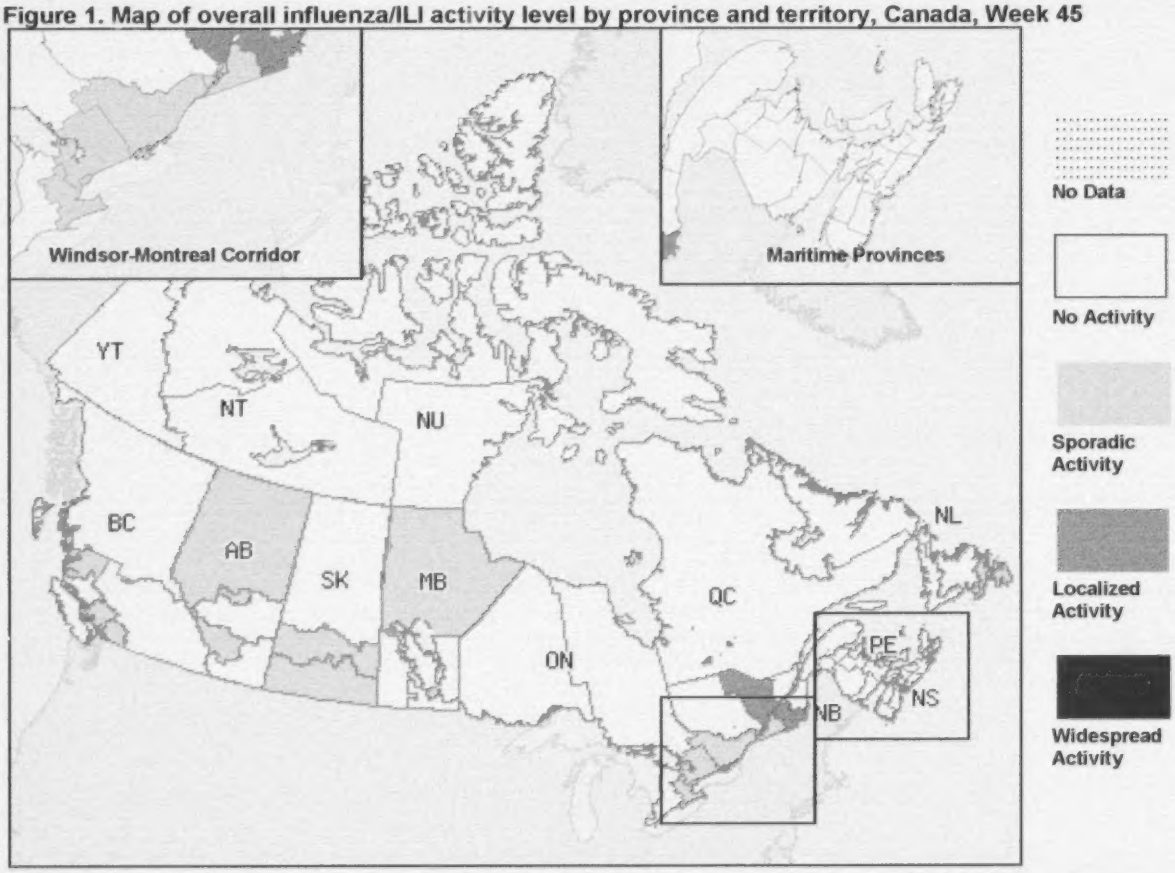
Overall Summary

- Influenza activity in Canada continued to increase in week 45.
- Laboratory detections of influenza continued to increase, primarily influenza A.
- One influenza outbreak in a long-term care facility was reported in week 45, resulting in one region reporting localized influenza/ILI activity. An increasing number of regions reported sporadic activity.
- Both paediatric and adult hospitalizations with influenza continued to be reported in week 45.
- The ILI consultation rate has been stable over the past three weeks.

Influenza/ILI Activity (geographic spread)

In week 45, one region in Quebec reported localized activity and 16 regions (in BC(2), AB(3), SK(2), MB(2), ON(4), QC(2) and NL(1)) reported sporadic activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 45

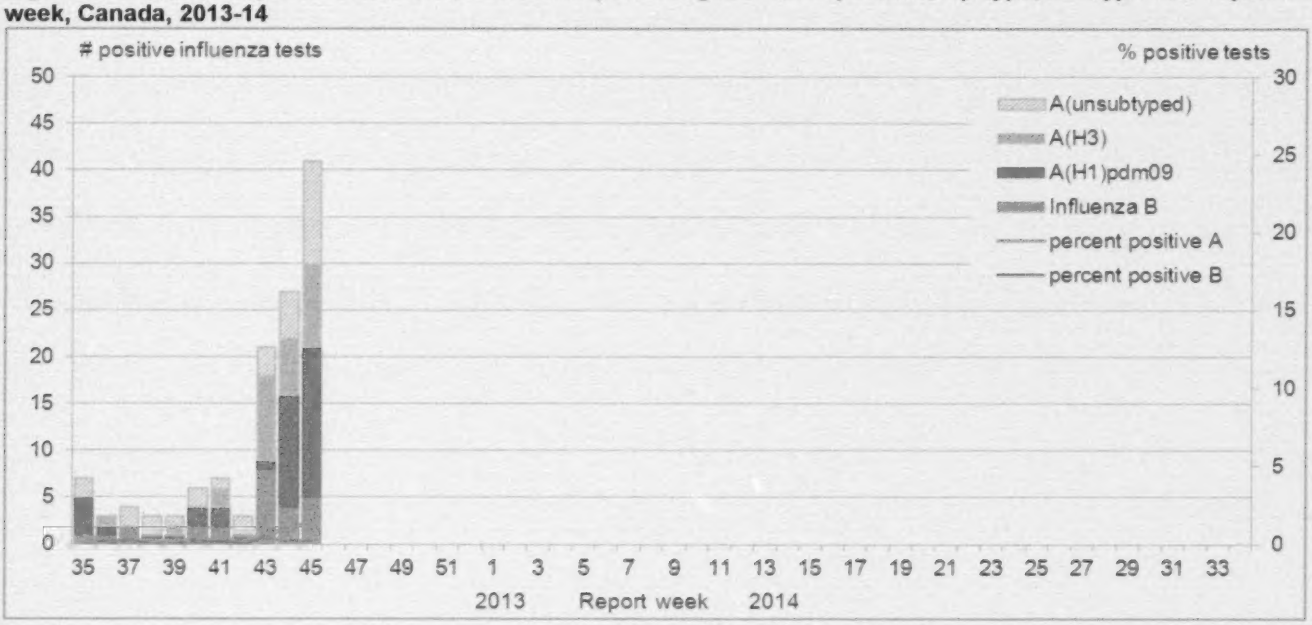


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

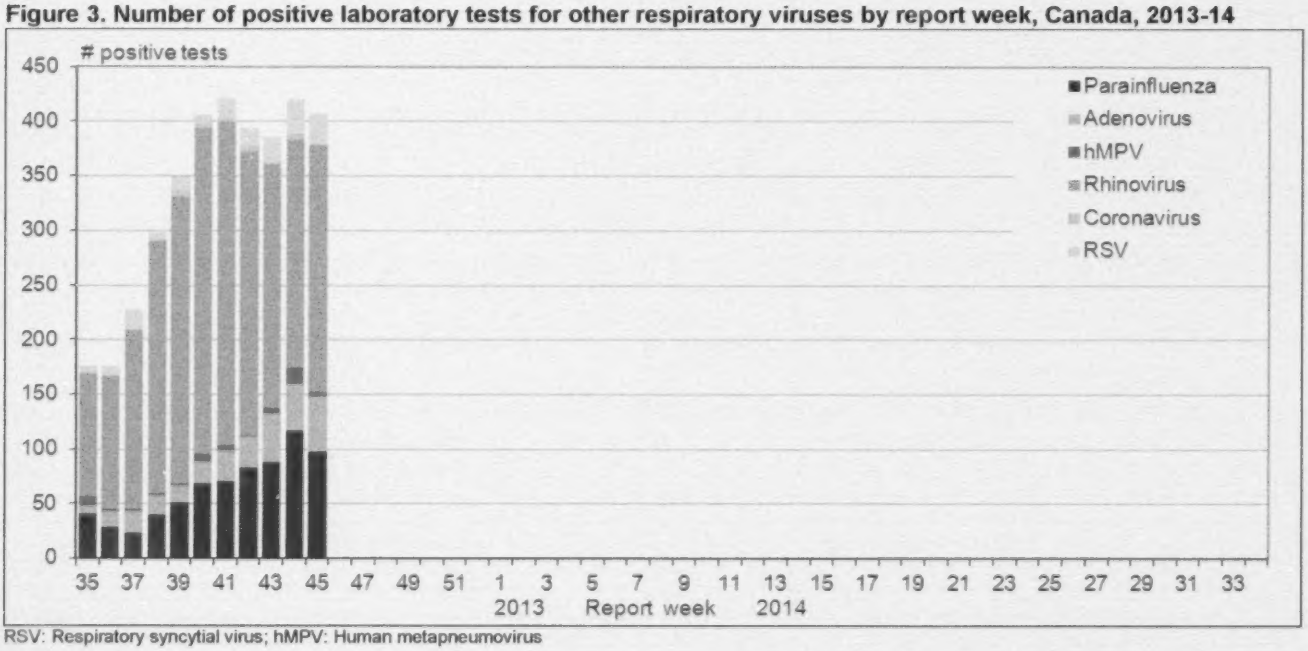
The number of positive influenza tests increased for the third week in a row, from 27 in week 44 to 41 in week 45, bringing the percentage of positive influenza tests to 1.6%, driven predominantly by detections of influenza A (Figure 2). Cumulative influenza virus detections by type/subtype to date have been predominantly influenza A (80%) with more A(H1N1)pdm09 identified compared to A(H3) among those subtyped (Table 1). Detailed information on age and type/subtype has been received for 100 cases to date this season. Adults 45-64 years of age represent 37% of cases to date (Table 2).

Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The numbers of positive tests for parainfluenza, adenovirus and RSV have been increasing slowly in recent weeks. Rhinovirus and parainfluenza remained the two predominant viruses detected in week 45 (Figure 3).
For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (November 3 to November 9, 2013)					Cumulative (August 25, 2013 to November 9, 2013)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	4	1	3	0	0	7	3	3	1	3
AB	10	7	1	2	3	29	20	7	2	12
SK	2	1	0	1	0	5	2	0	3	0
MB	2	2	0	0	0	3	3	0	0	1
ON	12	5	5	2	1	38	12	18	8	7
QC	5	0	0	5	1	16	0	0	16	2
NB	0	0	0	0	0	1	1	0	0	0
NS	0	0	0	0	0	0	0	0	0	0
PE	0	0	0	0	0	0	0	0	0	0
NL	1	0	0	1	0	1	0	0	1	0
Canada	**36**	**16**	**9**	**11**	**5**	**100**	**41**	**28**	**31**	**25**
Percentage[2]	87.8%	44.4%	25.0%	30.6%	12.2%	80.0%	41.0%	28.0%	31.0%	20.0%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

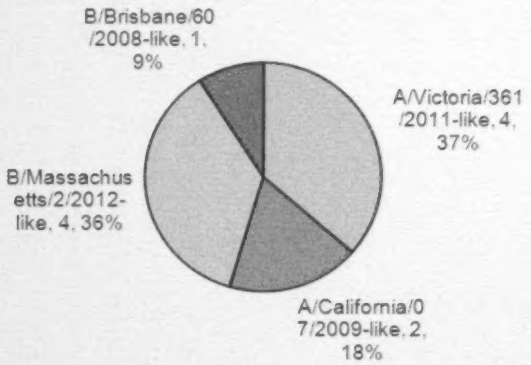
Age groups (years)	Weekly (November 3 to November 9, 2013)					Cumulative (August 25, 2013 to November 9, 2013)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	2	0	0	2	1	14	7	3	4	5	19	19.0%
5-19	4	1	1	2	1	8	1	1	6	2	10	10.0%
20-44	7	4	0	3	0	18	7	3	8	3	21	21.0%
45-64	4	1	1	2	0	32	14	11	7	5	37	37.0%
65+	0	0	0	0	1	9	2	4	3	4	13	13.0%
Unknown	0	0	0	0	0	0	0	0	0	0	0	0.0%
Total	17	6	2	9	3	81	31	22	28	19	100	100.0%
Percentage[2]	85.0%	35.3%	11.8%	52.9%	15.0%	81.0%	38.3%	27.2%	34.6%	19.0%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 inclurtes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 11 influenza viruses [four A(H3N2), two A(H1N1)pdm09 and five influenza B]. Ten of the eleven viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine; one influenza B virus was similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 11



The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009 (H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b, and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 11 influenza viruses for resistance to oseltamivir and zanamivir, and all were sensitive. Six influenza A viruses were tested for amantadine resistance, and all were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

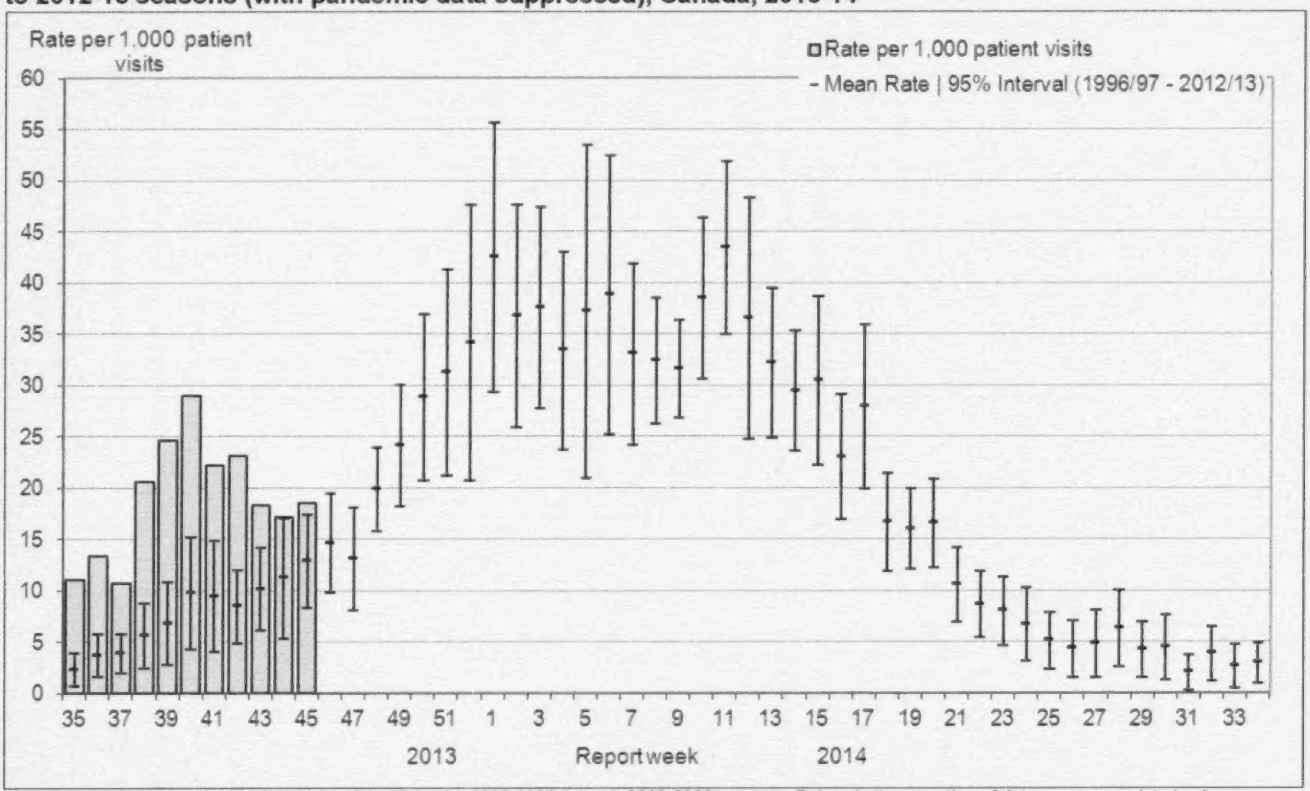
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	4	0	4	0	4	4 (100%)
A (H1N1)	2	0	2	0	2	2 (100%)
B	5	0	5	0	NA[1]	NA[1]
TOTAL	11	0	11	0	6	6 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased slightly from 17.2/1,000 in week 44 to 18.6/1,000 in week 45, but was similar to the previous two weeks (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

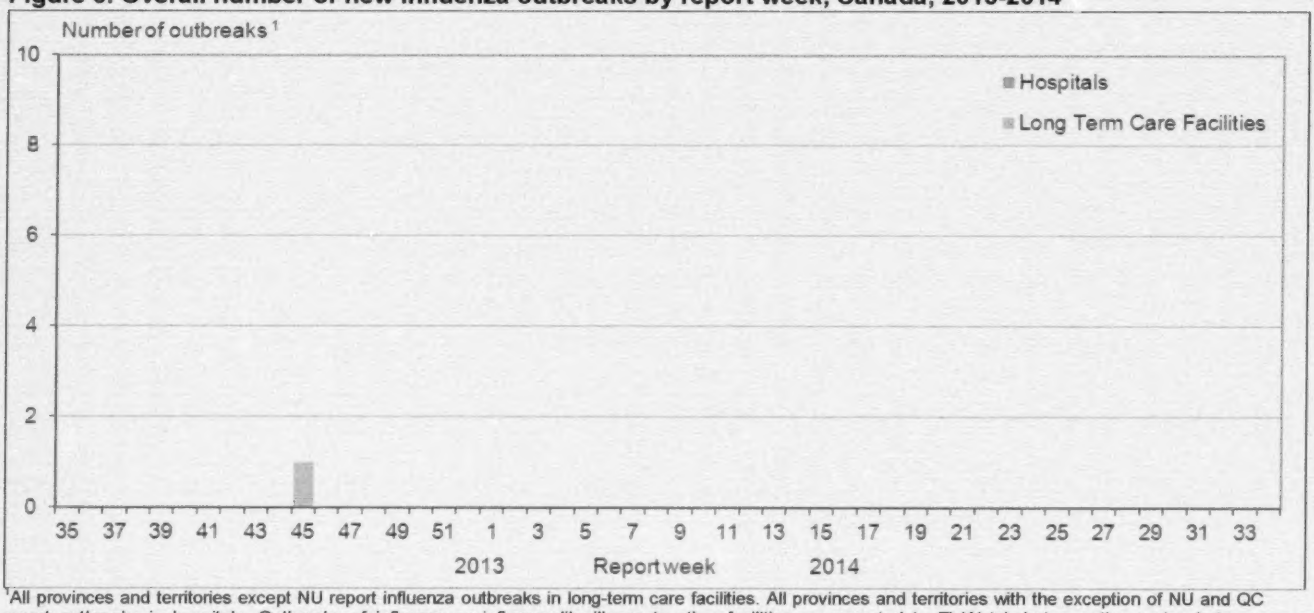


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

One new influenza outbreak in a long-term care facility was reported in week 45 (Figure 6).

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

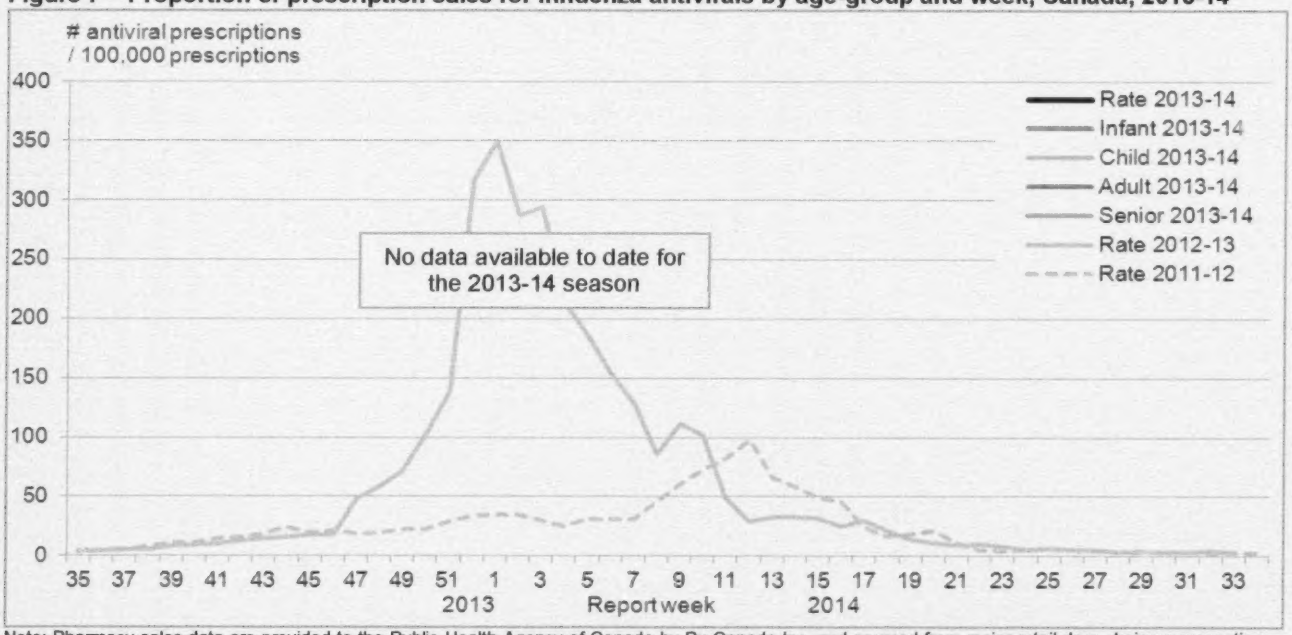


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

Pharmacy surveillance for sales of influenza antivirals has not yet begun for the 2013-14 influenza season (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 3,000 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 45, two new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network: two children 5-9 years of age, one with influenza A(H1N1)pdm09 and one with influenza B (Figure 8a).

To date this season, a total of seven influenza-associated paediatric hospitalizations have been reported by the IMPACT network (Table 4). One ICU admission was required in a child 2-4 years of age with influenza B. No deaths have been reported (Figure 9a).

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

Active surveillance of laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations reported by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network will begin on November 15th 2013. The PCIRN-SOS network continues to report limited data on laboratory-confirmed cases of influenza identified through passive surveillance. Two new hospitalizations were reported in week 45, one adult 20-44 years of age and one 45-64 years of age, both with influenza A. No ICU admissions or deaths were reported in week 45 (Figure 8b).

To date this season, eight influenza-associated hospitalizations have been reported by the PCIRN-SOS network, all with influenza A. The majority have been adults over 45 years of age (Table 5). ICU admission was required for one hospitalization and no deaths have been reported (Figure 9b).

Note: The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

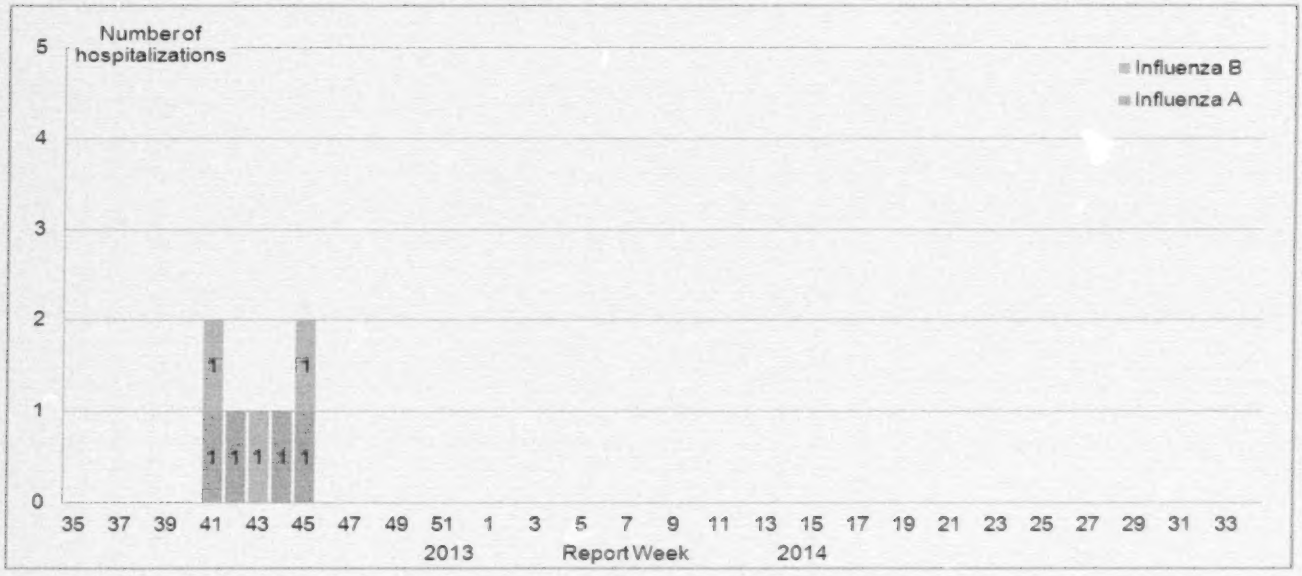
Age groups	Cumulative (25 Aug. 2013 to 9 Nov. 2013)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	1	0	0	1	0	1 (14%)
6-23m	0	0	0	0	0	0
2-4y	2	1	0	1	2	4 (57%)
5-9y	1	1	0	0	1	2 (29%)
10-16y	0	0	0	0	0	0
Total	4	2	0	2	3	7
% [1]	57.1%	50.0%	0.0%	50.0%	42.9%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 9 Nov. 2013)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	0	0	0	0	0	0
20-44	1	0	0	1	0	1 (13%)
45-64	4	0	1	3	0	4 (50%)
65+	3	0	0	3	0	3 (38%)
Total	8	0	1	7	0	8
% [1]	100%	0%	13%	88%	0%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)

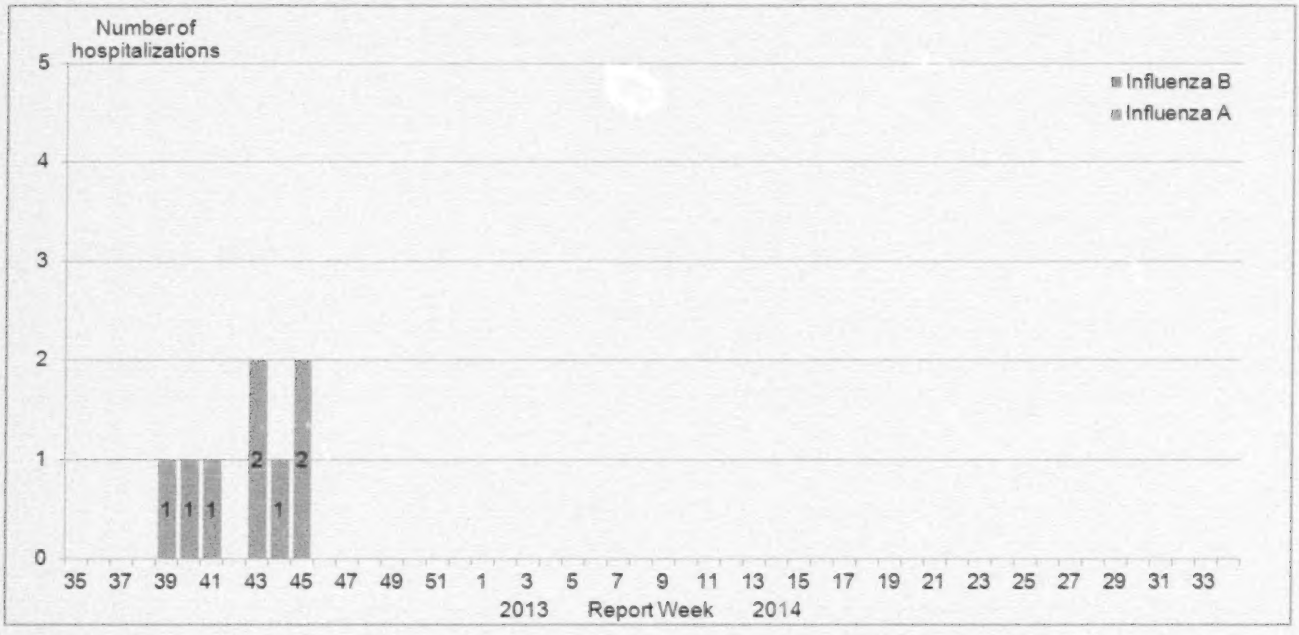
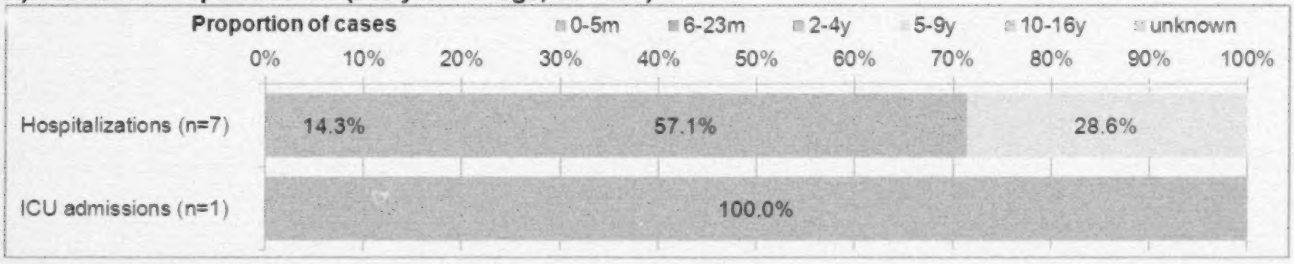
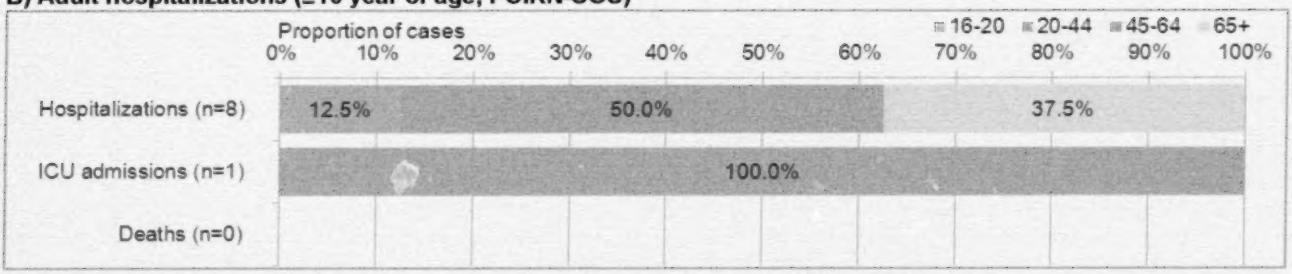


Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 45, five new laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* One case was reported in each of the following age-groups: 15-19 years, 20-44 years, 45-64 years; and two cases were ≥65 years of age. Four cases had influenza A(unsubtyped) and one had A(H1N1)pdm09. No ICU admissions or deaths were reported in week 45.

To date this season, 25 influenza-associated hospitalizations have been reported, of which 19 (76%) had influenza A (Table 6). Consistent with the data from IMPACT and PCIRN-SOS, there is a greater proportion of cases of influenza B among children under 5 years of age, whereas influenza A is predominant among adults over 45 years of age. Two ICU admissions have been reported in adults 45-64 years of age and no deaths have been reported. It is important to note that the cause of death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Data from the Aggregate Surveillance System may also include cases reported by the IMPACT and PCIRN networks. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, NS, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not reported in Ontario.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (Aug. 25, 2013 to Nov. 9, 2013)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	2	0	1	1	4	6 (24%)
5-14	0	0	0	0	1	1 (4%)
15-19	1	0	0	1	0	1 (4%)
20-44	1	0	0	1	0	1 (4%)
45-64	9	1	6	2	1	10 (40%)
65+	6	2	1	3	0	6 (24%)
Total	19	3	8	8	6	25
Percentage[1]	76.0%	15.8%	42.1%	42.1%	24.0%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): No new laboratory-confirmed cases of human infection with avian influenza A(H7N9) have been reported since 6 November 2013. As of 15 November 2013, the WHO has been informed of 139 laboratory-confirmed human cases with avian influenza A(H7N9), including 45 deaths.

PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Human Swine Influenza

Influenza A(H3N2)v: No new cases of human infection with influenza A(H3N2)v were reported in week 45. To date in 2013, a total of 19 A(H3N2)v cases including one hospitalization have been reported.

Centers for Disease Control and Prevention Influenza A(H3N2) Variant Virus

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)
Since the FluWatch report for week 44, the WHO has reported three additional laboratory-confirmed cases of MERS-CoV. One case was from Qatar, and two cases were from Saudi Arabia.

The case in Qatar is a 48 year old male with underlying medical conditions. Preliminary epidemiological investigations revealed that he frequently visited animal barns. He did not travel recently and had no contact with a previously confirmed case.

The two cases in Saudi Arabia were both male, aged 43 years and 72 years. The older individual had underlying medical conditions, and both were hospitalized. They have not had contact with a previously confirmed case, but one individual has had contact with animals.

Globally, from September 2012 to November 14, 2013, WHO has been informed of a total of 153 laboratory-confirmed cases of infection with MERS-CoV, including 64 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.
PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

International Influenza Reports

Influenza activity in temperate countries in the northern hemisphere remained at low levels in weeks 43-45.

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.